ANALYTICAL BIOCHEMISTRY

Methods in the Biological Sciences

Volume 196, 1991

EDITOR-IN-CHIEF
William B. Jakoby

EXECUTIVE EDITORS

Assistant to the Editor-in-Chief, William S. Allison

Shelby L. Berger
Ludwig Brand
Peter Brodelius
Prescott Deininger
Jack E. Dixon
Othmar Gabriel
Howard Goldfine
Owen W. Griffith
John A. Hanover
William F. Harrington
Tony E. Hugli
Richard D. Klausner
John H. Law
Y. C. Lee
Walter M. Lovenberg
William D. McElroy
EDITOR EMERITUS
Richard N. Perham
James F. Riordan
B. David Stollar
Clarence H. Suelter
Bert L. Vallee
Helen Van Vunakis
Arthur Weissbach

Alvin Nason, Founding Editor, 1960–1977
Nathan O. Kaplan and William D. McElroy, Editorial Committee Co-Chairmen, 1978–1986

ACADEMIC PRESS, INC.
Harcourt Brace Jovanovich, Publishers
San Diego New York Boston London Sydney Tokyo Toronto

Digitized by the Internet Archive
in 2026

https://archive.org/details/analytical-biochemistry_1991_196_contents

Copyright © 1991 by Academic Press, Inc.
All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1991 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0003-2697/91 $3.00

MADE IN THE UNITED STATES OF AMERICA

This journal is printed on acid-free paper.

CONTENTS OF VOLUME 196

NUMBER 1, JULY 1991

Instructions to Authors ix

Determination of Platelet-Activating Factor and Alkyl-ether Phospholipids by Gas Chromatography–Mass Spectrometry via Direct Derivatization *Michael Balazy, Pierre Braquet, and Nicolas G. Bazan* 1

Analytical Procedures for a Cryptic Messenger RNA That Mediates Translational Control of Prostaglandin Synthase by Glucocorticoids *J. Martyn Bailey and Mukesh Verma* 11

Development of an Acid-Soluble Assay for Measuring Retrovirus Integrase 3′-OH Terminal Nuclease Activity *Michael L. Fitzgerald, Ajaykumar C. Vora, and Duane P. Grandgenett* 19

Quantitative Determination of the Intracellular Concentration of the Various Forms of HPr, a Phosphocarrier Protein of the Phosphoenolpyruvate: Sugar Phosphotransferase System in Growing Cells of Oral Streptococci *Christian Vadeboncoeur, Denis Brochu, and Jonathan Reizer* 24

Mercury-Arc Photolysis: A Method For Examining Second Messenger Regulation of Endothelial Cell Monolayer Integrity *Wayne F. Patton, J. Steven Alexander, Andrea B. Dodge, Robert J. Patton, Herbert B. Hechtman, and David Shepro* 31

Transpeptidation during the Analytical Proteolysis of Proteins *Eleanor Canova-Davis, T. Jeremy Kessler, and Victor T. Ling* 39

Large-Scale Preparation of Asymmetrically Labeled Fluorescent Lipid Vesicles *Hong-Ngoc Thi Dao, Jonathan C. McIntyre, and Richard G. Sleight* 46

Quantitation of Type I, III, and V Collagens in Human Tissue Samples by High-Performance Liquid Chromatography of Selected Cyanogen Bromide Peptides *Edward J. Miller, Donald K. Furuto, and Annie J. Narkates* 54

Detection Apparatus for Multiple Heterogeneous Chemiluminescence Immunoassay Configurations *Omar S. Khalil, Thomas F. Zurek, Curtis Pepe, Kevin Genger, Denise G. Huff, Carole Coleman, Charles Hanna, Roger Hu, Jim Mackowiack, and Larry Bennett* 61

Quantitative Study of Protein Association at Picomolar Concentrations: The λ Phage cI Repressor *Dorothy Beckett, Kenneth S. Koblan, and Gary K. Ackers* 69

Nondenaturing Protein Electrotransfer of the Esterase Activity of Lipolytic Preparations *Marie-Christiane Brahimi-Horn, Maria L. Guglielmino, Antoinette M. Gaal, and Lindsay G. Sparrow* 76

Fast and Sensitive Silver Staining of DNA in Polyacrylamide Gels *Brant J. Bassam, Gustavo Caetano-Anollés, and Peter M. Gresshoff* 80

Fluorometric Determination of Plasma Adenosine Concentrations Using High-Performance Liquid Chromatography *Katsuyuki Miura, Michiaki Okumura, Tokihito Yukimura, and Kenjiro Yamamoto* 84

Quantitative Determination of mRNA Phenotypes by the Polymerase Chain Reaction *Andrea Ballagi-Pordány, András Ballagi-Pordány, and Keiko Funa* 89

Separation of Phytanic and Pristanic Acid by High-Pressure Liquid Chromatography: Application of the Method *Bengt Frode Kase, Jonas Ölund, and Leslie Sisfontes* 95

A Dot-Blot Assay for Quantitation of Nanogram Amounts of Protein in the Presence of Carrier Ampholytes and Other Possibly Interfering Substances *Martin Guttenberger, Volker Neuhoff, and Rüdiger Hampp* 99

Quantitative Determination of Albumin in Urine by On-Line Immunoadsorptive Cleanup and Reversed-Phase Chromatography *E. Reh, M. Kratzer, D. Zdunek, and F. Lang* 104

Detection of Radical Adducts of 5,5-Dimethyl-1-Pyrroline *N*-oxide by the Combined Use of High-Performance Liquid Chromatography with Electrochemical Detection and Electron Spin Resonance *John Towell and B. Kalyanaraman* 111

A Mass Spectrometry Method for Mapping the Interface Topography of Interacting Proteins, Illustrated by the Melittin–Calmodulin System *Robert F. Steiner, Sharon Albaugh, Catherine Fenselau, Constance Murphy, and Martha Vestling* 120

Quantitative High-Performance Liquid Chromatography Analysis of DNA Oxidized *in Vitro* and *in Vivo* *Krystyna Frenkel, Zhaojing Zhong, Huachen Wei, Jerzy Karkoszka, Umesh Patel, Khurram Rashid, Maria Georgescu, and Jerome J. Solomon* 126

Determination of Enzyme Specificity in a Complex Mixture of Peptide Substrates by N-Terminal Sequence Analysis *Ashley J. Birkett, Dulce F. Soler, Russell L. Wolz, Judith S. Bond, Jeffrey Wiseman, Judd Berman, and Robert B. Harris* 137

The Direct Measurement of Protein Kinase C (PKC) Activity in Isolated Membranes Using a Selective Peptide Substrate *Balu R. Chakravarthy, Alexandra Bussey, James F. Whitfield, Marianna Sikorska, Ross E. Williams, and Jon P. Durkin* 144

Filter Screening of Antibody Fab Fragments Secreted from Individual Bacterial Colonies: Specific Detection of Antigen Binding with a Two-Membrane System *Arne Skerra, Martin L. Dreher, and Greg Winter* 151

Analysis of Mutant tRNA Gene Transcripts *in Vivo* in *Saccharomyces cerevisiae* by Abortive Primer Extension *M. L. Wilhelm, F. X. Wilhelm, and J. P. Ebel* 156

Quantitation of mRNA by the Kinetic Polymerase Chain Reaction Assay: A Tool for Monitoring P-Glycoprotein Gene Expression *Torsten Hoof, John R. Riordan, and Burkhard Tümmler* 161

Determination of Urinary 5-Hydroxyindole-3-acetic Acid by High-Performance Liquid Chromatography with Electrochemical Detection and Direct Sample Injection *Anders Helander, Olof Beck, Mona Wennberg, Tina Wikström, and Gun Jacobsson* 170

Detecting Immunocomplex Formation in Sucrose Gradients by Enzyme Immunoassay: Application in Determining Epitope Accessibility on Ribosomes *Wan-Jr Syu, Brenda Kahan, and Lawrence Kahan* 174

Separation by Capillary Electrophoresis Followed by Dynamic Elution *Patrick Camilleri, George N. Okafo, and Christopher Southan* 178

A Reversed-Phase Ion-Pair High-Performance Liquid Chromatography Method for Bovine Testicular Hyaluronidase Digests Using Postcolumn Derivatization with 2-Cyanoacetamide and Ultraviolet Detection *Jeffrey A. Cramer and Leonard C. Bailey* 183

Gel Electrophoresis of Reacting Macromolecules. Rate-Limited Self-Association *Yang Shunong, Mariola M. Wolska-Klis, and John R. Cann* 192

BOOK REVIEWS

Biological Trace Element Research. Multidisciplinary Perspectives. Edited by K. S. Subramanian, G. V. Iyengar, and K. Okamato Reviewed by *Kenneth H. Falchuk* 199

Methods in Enzymology, Vol. 194, *Guide to Yeast Genetics and Molecular Biology.* Edited by Christine Guthrie and Gerald R. Fink Reviewed by *Sanford Silverman* 199

Methods in Neurosciences. Edited by P. Michael Conn Reviewed by *Sheryl M. Sato* 200

NUMBER 2, AUGUST 1, 1991

Instructions to Authors x

2-Nitro-5-(6-bromohexanoylamino)benzoic Acid Test Paper Method for Detecting Microorganisms Capable of Producing Cephalosporin Acylases *Qijiu Zhang, Wanxue Xu, and Lei Shi* 201

A Reverse-Phase HPLC Method for cAMP Phosphodiesterase Activity *Giuseppe Spoto, Edward Whitehead, Anna Ferraro, Pantaleo M. Di Terlizzi, Carlo Turano, and Francesca Riva* 207

Assay of 3-Hydroxy-3-methylglutaryl CoA Reductase Activity Using Anionic-Exchange Column Chromatography *K. K. Ong, H. T. Khor, and D. T. S. Tan* 211

High-Performance Liquid Chromatography of *N*-Alkylprotoporphyrins: An Investigation of Their Formation and Loss under Chemical and Enzymatic Conditions *in Vitro* *Anthony H. Gibbs and Francesco De Matteis* 215

Double Mixing Stopped-Flow Method for the Study of Equilibria and Kinetics of Dimer–Tetramer Association of Hemoglobins: Studies on Hb Carp, Hb A, and Hb Rothschild
Marjaneh Berjis and Vijay S. Sharma 223

Dibasic Amines as Competitive Ions Improve the Resolution between Polyanionic Nucleotides
Larry Callahan, Nancy Schwartz, and Ken Ng 229

Preparation of NADH/NADPH Using Cetyltrimethylammonium Bromide Permeabilized Baker's Yeast Cells
N. S. Naina, L. R. Gowda, and S. G. Bhat 234

Polyacrylamide Gel Electrophoresis of Reducing Saccharides Labeled with the Fluorophore 2-Aminoacridone: Subpicomolar Detection Using an Imaging System Based on a Cooled Charge-Coupled Device
Peter Jackson 238

Automated Nonisotopic Assay for Protein–Tyrosine Kinase and Protein–Tyrosine Phosphatase Activities
John Babcook, Julian Watts, Ruedi Aebersold, and Hermann J. Ziltener 245

Use of Exoglycosidases from *Mercenaria mercenaria* (Hard Shelled Clam) as a Tool for Structural Studies of Glycosphingolipids and Glycoproteins
Sujoy Ghosh, Sunmin Lee, Thomas A. Brown, Manju Basu, John W. Hawes, Donald Davidson, and Subhash Basu 252

A Spectrophotometric Assay for Chlorine-Containing Compounds
Jason A. Chesney, John R. Mahoney, Jr., and John W. Eaton 262

Detection of Plant Virus Coat Proteins on Whole Leaf Blots
Jane E. Polston, P. Bubrick, and Thomas M. Perring 267

A Stable Diazo Photoaffinity Label with High Absorptivity and Effective Photoactivation Beyond 300 nm
Klaus M. Hahn and Philip L. Southwick 271

Eosin Y Staining of Proteins in Polyacrylamide Gels
Fan Lin, Wei Fan, and Gary E. Wise 279

A Sensitive Radioenzymatic Assay for (*S*)-5-Formyltetrahydrofolate
David G. Priest, Marlene A. Bunni, Lorraine R. Romero-Fredes, John C. Schmitz, and John M. Whiteley 284

Elimination of Interfering Substances in the Presence of Detergent in the Bicinchoninic Acid Protein Assay
Ronald E. Gates 290

Measurement of Tyrosine Hydroxylase Apoenzyme Protein by Enzyme-Linked Immunosorbent Assay (ELISA): Effects of 1-Methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) on Striatal Tyrosine Hydroxylase Activity and Content
John F. Reinhard, Jr. and James P. O'Callaghan 296

A Sensitive Nonisotopic Method for the Determination of Intracellular Azidothymidine 5′-Mono-, 5′-Di-, and 5′-Triphosphate
Takuo Toyoshima, Satoshi Kimura, Shigeki Muramatsu, Hidekuni Takahagi, and Kaoru Shimada 302

An Improved Method for Isolating RNA from Porcine Adipose Tissue
I. Louveau, S. Chaudhuri, and T. D. Etherton 308

Purification of Rough-Type Lipopolysaccharides of *Neisseria meningitidis* from Cells and Outer Membrane Vesicles in Spent Media
Xin-Xing Gu and Chao-Ming Tsai 311

Modeling of Immunosensors under Nonequilibrium Conditions. I. Mathematic Modeling of Performance Characteristics
Se-Hwan Paek and Willfried Schramm 319

Modeling of Immunosensors under Nonequilibrium Conditions. II. Experimental Determination of Performance Characteristics
Willfried Schramm and Se-Hwan Paek 326

A Universal Method for Two-Dimensional Polyacrylamide Gel Electrophoresis of Membrane Proteins Using Isoelectric Focusing on Immobilized pH Gradients in the First Dimension
Josef Schüpbach, Rudolf W. Ammann, and Andreas U. Freiburghaus 337

Stopped-Flow Kinetic Analysis for Monitoring Superoxide Decay in Aqueous Systems
Dennis P. Riley, Willie J. Rivers, and Randy H. Weiss 344

Automated Precolumn Fluorescence Labelling by Carbodiimide Activation of *N*-Acetylaspartate and *N*-Acetylaspartylglutamate Applied to an HPLC Brain Tissue Analysis
Jakob Korf, Lammy Veenma-van der Duin, Kor Venema, and Johannes H. Wolf 350

Fluorometric Determination of Phosphatidylcholine as a Measure of Phospholipid Methylation
D. M. Dandurand, F. L. Kiechle, D. R. Strandbergh, B. Zak, and J. D. Artiss 356

Spectrophotometric Assay and Electrophoretic Detection of *trans*-Feruloyl Esterase Activity
John A. McCallum, Iain E. P. Taylor, and G. H. Neil Towers 360

Purification of RNA Using an Anti-RNA Monoclonal Antibody *Daniel Reines* 367

A Rapid Colorimetric Assay for Heparinase Activity *M. Yahiya Khan and Stuart A. Newman* 373

Determination of Serum Cholinesterase Activity by Liquid Chromatography with Electrochemical Detection
R. Brent Miller and C. LeRoy Blank 377

Biotinidase Radioassay Using an ^{125}I-Biotin Derivative, Avidin, and Polyethylene Glycol Reagents
S. A. Evangelatos, E. Livaniou, S. E. Kakabakos, G. P. Evangelatos, and D. S. Ithakissios 385

Development of an Automatic Machine for *in Situ* Hybridization and Immunohistochemistry
Toyozoh Takahashi and Katsuyuki Ishiguro 390

Monoclonal Antibody-Mediated Solid-Phase Assay for Mammalian O^6-Alkylguanine DNA Alkyltransferase Activity *Masahiko S. Satoh, Chieko Moriyama, Akira Asai, Hiroshi Handa, Manfred F. Rajewsky, Toshio Kuroki, and Nam-ho Huh* 403

Regeneration of Enzyme Activity after Western Blot: Activation of RNase L by 2-5A on Filter—Importance for Its Detection *Tamim Salehzada, Michelle Silhol, Bernard Lebleu, and Catherine Bisbal* 410

Electrochemical Release of Ethidium into and Fluorescence Detection of DNA–Ethidium Complexes in the Diffusion Layer at a Carbon Paste Electrode *Beverly Ann Hanes Swaile and James Q. Chambers* 415

Preparation and Application of a Fluorescein-Labeled Peptide for Determining the Affinity Constant of a Monoclonal Antibody–Hapten Complex by Fluorescence Polarization
Wim Jiskoot, Peter Hoogerhout, E. Coen Beuvery, James N. Herron, and Daan J. A. Crommelin 421

Denaturing Gradient Gel Method for Mapping Single Base Changes in Human Mitochondrial DNA
Kyunglim L. Yoon, Josephine S. Modica-Napolitano, Susan G. Ernst, and June R. Aprille 427

Ultrasensitive Chemiluminescent and Colorigenic Detection of DNA, RNA, and Proteins in Plant Molecular Biology *Klaus Düring* 433

A Silica Gel Plate-Based Qualitative Assay for Acetylcholinesterase Activity: A Mass Method to Screen for Potential Inhibitors
John S. Kiely, Walter H. Moos, Micheal R. Pavia, Roy D. Schwarz, and Gail L. Woodard 439

Kinetic Analysis of the Free-Radical-Induced Lipid Peroxidation in Human Erythrocyte Membranes: Evaluation of Potential Antioxidants Using *cis*-Parinaric Acid to Monitor Peroxidation
Rosemary McKenna, Ferenc J. Kézdy, and Dennis E. Epps 443

High-Performance Liquid Chromatographic Determination of α-Acetyldigoxin in *Digitalis lanata* Leaves
Yukari Ikeda, Youichi Fujii, and Mitsuru Yamazaki 451

Author Index for Volume 196 456

NOTICE

The Subject Index for Volume 196 will appear in the December 1991 issue as part of a cumulative index for the year 1991.